

FRIEDLAND 11: PAST CAS EXAMINATION QUESTIONS

B. Frequency-Severity Method #3 Calculations

B1. You are given the following information:

<u>Report Year</u>	<u>Number of Incurred Claims</u>	<u>Average Paid Claim for Claims Settled in 1983</u>
1983	23,000	\$700
1982	22,000	1,500
1981	21,000	3,500
1980	20,000	4,500

<u>Age of Claim*</u>	<u>Annual % Increase in Claim Cost**</u>	<u>Ratio of Report Year Incurred Claims Settled by Disposal Interval</u>			
		<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
0–12 mos.	5.0	.460	.460	.480	.500
13–24 mos.	7.0	.380	.370	.364	
25–36 mos.	10.0	.110	.113		
37–48 mos.	15.0	.050			

* Measured from beginning of report year.

** Assume that these values include the effect of any change in disposal patterns.

a. Based on the latest data for percentage of claims settled in each age group, complete the following disposal table for report year 1983:

<u>Age of Claim</u>	<u>Ratio of 1983 Report Year Claims Settled</u>
0–12	.50
13–24	
25–36	
37–48	

b. Estimate the ultimate severity for report year 1983. (84–7–52a&b–2.7)

B2. Given the following information, estimate report year required reserve for known claims as of 12/31/84. State any assumptions you make.

i) Claim settlement characteristics are the following:

<u>Payment Interval*</u>	<u>% of Claims Closed</u>	<u>Paid Severity as a % of Reported Year Paid Severity</u>
0 to 12	50%	90%
13 to 24	35%	100%
25 to 36	15%	115%
37+	0%	N/A

*Measured in months from beginning of report year.

ii) 100 claims have been reported in each year 1981 through 1984.

iii) The paid severity for all 1982 reportings is \$1,000.

iv) Claim costs are estimated to have increased 10% for report year 1983 and 5% further for report year 1984. (85–7–59–2)

Solutions are based on pp. 205–11, 243–64.

$$\text{B1. a. Disposal Rate} = \frac{(\text{Latest Calendar Year Rate})(\text{Percentage Claims O/S})}{\text{Percentage Claims O/S Latest Calendar Year}}$$

$$\text{DR}_{83/13-24} = \frac{(.364)(1 - .500)}{1 - .480} = .350$$

$$\text{DR}_{83/25-36} = \frac{(.113)(1 - .500 - .350)}{1 - .460 - .370} = .100$$

$$\text{DR}_{83/36-48} = 1 - .500 - .350 - .100 = .050$$

- b. 1) Calculated trended paid severities:

$$\text{TPS}_{83/13-24} = (1,500)(1.07) = 1,605$$

$$\text{TPS}_{83/25-36} = (3,500)(1.10)^2 = 4,235$$

$$\text{TPS}_{83/37-48} = (4,500)(1.15)^3 = 6,844$$

- 2) Estimate ultimate severity for report year 1983:

$$\text{US} = \sum (\text{DR})(\text{TPS})$$

$$\text{US}_{83} = (.500)(700) + (.350)(1,605) + (.100)(4,235) + (.050)(6,844) = 1,677$$

- B2. 1) Calculate trended paid severities:

$$\text{TPS} = (1,000)(\text{Trend Factors})(\text{Interval Ratio})$$

$$\text{TPS}_{83/25-36} = (1,000)(1.10)(1.15) = 1,265$$

$$\text{TPS}_{84/13-24} = (1,000)(1.10)(1.05)(1.00) = 1,155$$

$$\text{TPS}_{84/25-36} = (1,000)(1.10)(1.05)(1.15) = 1,328$$

- 2) Estimate unpaid claims for report year 1984:

$$\text{UC} = \sum (\text{Number of Claims})(\text{Disposal Rate})(\text{TPS})$$

$$\text{UC}_{84} = [100][(.15)(1,265) + (.35)(1,155) + (.15)(1,328)] = 79,320$$